Faculty of Engineering
Credit Hours Engineering Programs

جامعة عين شمس
كلية الهندسة
برامج الساعات المعتمدة

ENGR 120: Engineering Computation
Spring 2013

SHEET 02

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1. Fill in the blanks in the following table. Assume all binary numbers are positive.

Binary	Decimal
1001	
00110011	
10000000	
0.1001001	
11.111	
	105
	402
	17.75
	0.9 (using 8 digits only)
	10.65625

2. Consider the following number of bits: 6, 10, 12, and 16. How many different binary values can each represent? What is the range of signed/unsigned numbers represented in each case?
3. Add the two unsigned binary numbers: 1010101 and 1101100. Use your knowledge of conversion from binary to decimal to check your answers.
4. What is the two's complement of the binary number 10100? **[Homework]**
5. The first column in the following table contains three different positive and negative binary numbers in 2's complement representation. Compute the negative of each of these values and list them in the second column.

X	–X
00001111	
10101010	
00111001	

6. Express the decimal number –13 in binary using two's complement notation in 6, 8, and 16 bits. Comment on your answers.
7. Add the two 2's complement numbers: 10101010 and 00011011. Now add 10101010 and 11010000. Use your knowledge of conversion to decimal to check your results. **[Homework]**
8. What is the decimal equivalent of the binary number 100001 if it represents:
    a. An unsigned integer
    b. A signed number using one's/two's complement representation.
9. Convert the following decimal numbers to binary and perform subtraction using two's complement (Use 8 bits for each number):
    a. 97 and 121
    b. 66 and 36
    c. 73 and 25. **[Homework]**
10. Fill-in the following table with the appropriate decimal and hexadecimal values. The binary numbers are all positive.

Binary	Decimal	Hexadecimal
1100110		
101000		
10110		

11. Convert each of the following hexadecimal numbers into Decimal and Binary representation: FEED, DEAD, and ADD **[Homework]**.
12. Give the equivalence of $(3650)_{10}$ in hexadecimal.
13. Write your name in ASCII using an 8-bit code with the left most bit equal to 0.